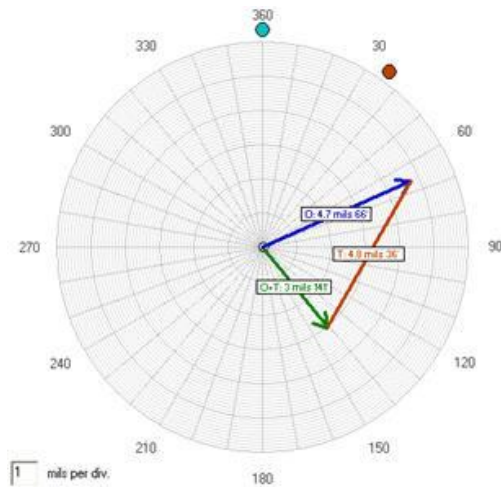
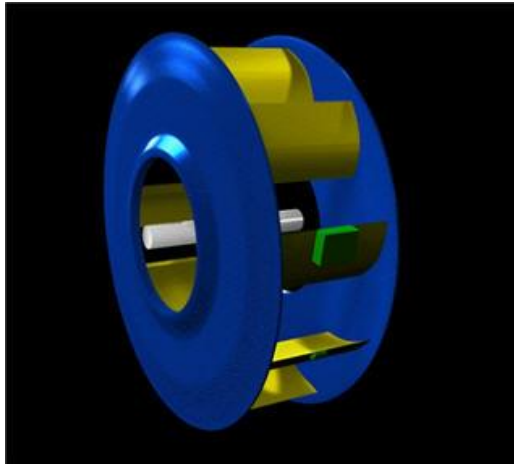


Mobius Institute Precision Balancing Training: New for 2011!

Quick facts

Balancing is vitally important. A precision balanced machine exerts less stress on its bearings and structural components, which means it will run longer without requiring maintenance. Modern vibration analyzers provide the means to perform the balance, but there is a lot to learn in order to be successful.



Public and on-site training

The following course can be delivered on-site, or you can attend one of our public courses. If held on-site, we can adjust the course content to meet your needs, and we can use your balancing instrument.

Course description

*Balancing - master
Duration: 2 days*

Description:

Machines that have been precision balanced run longer, and cost less to run. Unbalance causes fatigue and reduces the life of bearings and can make looseness and resonance conditions far worse. This course will equip you with the knowledge and skills so that you can use a vibration analyzer/balancer, or a simple sheet of graph paper and protractor, and balance a machine - without even having to remove it from the plant. You will learn how to recognize unbalance and set up the balance job for a successful balance. We will start with the basics, providing an introduction to vibration, phase and vectors, and fully explain the balancing process. You will learn how to balance a machine using the single-plane and two-plane balance function of your analyzer, after you first learn how to perform a single plane balance with vectors. You will watch a demonstration of the balance process, and you will be able to try it for yourself.

Language:

Training delivered in Arabic and/or English based on the participants preference.

Training material is in English.

Who should attend?

If you have to balance machines, then you need this course. If you own a modern analyzer/balancer you have two choices: you can just take the readings and do what the analyzer tells you to do, or you can understand what you are doing and be prepared when things go wrong – and they will. We will ensure you understand the entire process, and give you the skills to return to the plant and perform precision balancing. Note: Although we will not have time to explain the operation of every model of vibration analyzer, we will provide you with the knowledge so that you will be successful with whatever model you own.

What is unique about this course?

Mobius makes it unique. We use 3D animations, Flash simulations, and software simulators that completely explain and demonstrate the balancing process – you need to see them to believe them! You will understand vibration, phase, vectors and the calculations required. And you will understand the balancing process.

Topics:

What is unbalance?

- *Static and couple (with animations)*
- *Dynamic*

Why do machines become out of balance

Using vibration analysis to ensure it is out of balance and not misaligned

Dealing with run-out and eccentricity, etc.

The balancing check-list:

- *What you must have in place to do the balance job*

Practical issues

- *Stopping and starting the machine*
- *Knowing where to place the weights*
- *Where do you get the weights (what can be used as trial and final weights)*

Quick review of amplitude and phase readings

- *Relationship between vibration and unbalance and speed*
- *Relationship between balance weight/force and radius*
- *Phase conventions*

Collecting vibration and phase readings

- *What type of vibration and phase sensor to use*
 - *Accelerometers and proximity probes*
 - *Optical and laser tachometers*
 - *Keyphasors*
 - *Can you use a strobe to balance?*
- *Where to place the sensors*
- *Mounting the sensors*

Understanding vectors

- *What are they?*
- *Adding and subtracting vectors*
- *Polar plots*
- *Heavy spot and high spot*
- *Leading and lagging phase*

Single plane balancing

- *Review of the process*
- *When can you use the single-plane method*
- *Using vectors to perform single-plane balancing*
- *Using modern data collectors/analyzers to perform single-plane balancing*

Estimating the size for the trial weight

Adding weights:

- *Leaving the trial weights on between runs*
- *Removing the trial weights between runs*
- *Splitting weights: when the solutions calls for a weight between two blades or holes*
- *Combining weights: when balance weights are already on the machine and you wish to consolidate them*

Two-plane balancing

- *Review of the process*
- *When should you use the two-plane method*
- *Using modern data collectors/analyzers to perform two-plane balancing*

The static-couple method

Balancing overhung machines

A quick review of balancing flexible rotors

Balancing standards

- *ISO grades*
- *Using the charts*
- *Which grade to use*

Why balancing may not be successful

- *Machine is not out of balance*
- *Resonances*
- *Bad phase reference*

The four-run method – balancing without phase

A quick introduction to shop balancing

We will demonstrate the entire process, and you will also be able to take readings and balance a machine